

CLAIMS

What Is Claimed Is

- 1 1. A method comprising:
2 rotating a substrate at a predefined speed, the substrate having a first surface;
3 spray coating the first surface of the substrate with a negative-tone photoresist-solvent
4 solution at angle to the first surface to obtain coverage of deep etched features, the
5 negative-tone photoresist to solvent ratio being in the range of one to three and
6 one to five and a half and having a viscosity of between one and three centipoises;
7 and
8 moving a spray nozzle across the diameter of the first surface of the substrate at
9 varying speeds to achieve a negative-tone photoresist coat of substantially the
10 same thickness throughout the first surface.
- 1 2. The method of claim 1 further comprising:
2 priming the first surface of the substrate with a primer having a water contact angle
3 between forty and fifty degrees.
- 1 3. The method of claim 2 wherein, once primed, the photoresist can be sprayed in
2 environments having relative humidity levels as high as sixty percent.
- 1 4. The method of claim 1 wherein the negative-tone photoresist is a cyclohexanone-based
2 resist and the solvent is methyl-ethyl-ketone.
- 1 5. A method comprising:
2 rotating a substrate at a predefined speed, the substrate having a first surface;
3 spray coating the first surface of the substrate with a positive-tone photoresist-solvent
4 solution at angle to the first surface to obtain coverage of deep etched features, the
5 positive-tone photoresist to solvent ratio being in the range of one to five and one
6 to seven and having a viscosity of between one and three centipoises; and

7 moving a spray nozzle across the diameter of the first surface of the substrate at
8 varying speeds to achieve a positive-tone photoresist coat of substantially the
9 same thickness throughout the first surface.

1 6. The method of claim 5 further comprising:
2 priming the first surface of the substrate with a primer having a water contact angle
3 between forty and fifty degrees.

1 7. The method of claim 6 wherein, once primed, the photoresist can be sprayed in
2 environments having relative humidity levels as high as sixty percent.

1 8. The method of claim 5 wherein the positive-tone photoresist is a propylene glycol
2 monomethyl ether acetate-based resist and the solvent is methyl-ethyl-ketone.

1 9. The method of claim 5 wherein the deep etched features are deeper than 20 μm .

1 10. The method of claim 5 wherein the deep etched features are deeper than 200 μm .

1 11. A method for coating photoresist on a substrate having deep features comprising:
2 cleaning the substrate by immersing it into a cleaning solution;
3 rinsing the substrate in ultrapure water;
4 thoroughly drying the substrate;
5 priming the substrate by immersing it into a priming solution, the priming solution
6 having a water contact angle of between forty and fifty degrees,
7 rinsing the substrate in ultrapure water to remove excess priming solution;
8 thoroughly drying the substrate; and
9 spray coating the substrate with a photoresist, wherein the photoresist is sprayed at an
10 angle to the substrate surface.

1 12. The method of claim 11 wherein
2 the substrate is immersed into a cleaning solution of peroxide-sulfuric for five to
3 fifteen minutes, and

4 the substrate is rinsed in ultrapure water for five to ten minutes.

1 13. The method of claim 11 wherein the deep features are deeper than 20 μm .

1 14. The method of claim 11 wherein the deep features are deeper than 200 μm .

1 15. The method of claim 11 wherein the priming solution has a water contact angle of
2 between forty and fifty degrees.

1 16. The method of claim 11 wherein, once primed, the photoresist can be sprayed in
2 environments having relative humidity levels as high as sixty percent.

1 17. The method of claim 11 wherein the photoresist is a negative-tone photoresist that is
2 diluted with a solvent, the negative-tone photoresist to solvent ratio being in the range of one to
3 three and one to five and a half.

1 18. The method of claim 11 wherein the photoresist is a positive-tone photoresist that is
2 diluted with a solvent, the positive-tone photoresist to solvent ratio being in the range of one to
3 five and one to seven.